

OECD Programme on the Circular Economy in Cities and Regions

The Circular Economy in Zuid-Holland, Netherlands



OECD Regional Development Papers

The Circular Economy in Zuid-Holland, Netherlands



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Collaboration between the OECD and the European Commission

The OECD Programme on the Circular Economy in Cities and Regions and the European Commission's Circular Cities and Regions Initiative (CCRI) provide support to selected European cities and regions to: i) build new knowledge and evidence at local and regional levels in Europe on the state of the art of the circular economy; ii) identify new solutions and innovative governance options for the transition to a circular economy; iii) deepen knowledge on the transition to a circular economy at the regional level, especially in terms of value chains co-ordination; and iv) provide cities and regions with action plans to move from a linear to a circular economy.

Definition of circular economy

The circular economy is a system where the value of products, materials and resources is retained in the economy for as long as possible by returning them to the product cycle at the end of their use, thus minimising the generation of waste (EC, 2015^[1]). In cities and regions, the circular economy should ensure that: *services* (e.g. ranging from water to waste and energy) are provided while preventing waste generation, making efficient use of natural resources as primary materials, optimising their reuse and allowing synergies across sectors; *economic activities* are planned and executed in a way to close, slow and narrow loops across value chains; and *infrastructure* is designed and built to avoid linear lock-in, which uses resources intensively and inefficiently (OECD, 2020^[2]).

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The case study was drafted by a team composed of Oriana Romano, Head of Unit, Ander Eizaguirre, Policy Analyst, Water Governance, Blue and Circular Economy Unit, and Felipe Bucci Ancapi, Researcher at the Delft University of Technology (Netherlands). Nadim Ahmad, Deputy Director of the CFE, and Soo-Jin Kim, Deputy Head of the Cities, Urban Policies and Sustainable Development Division in the CFE, provided comments on the draft. Special thanks are conveyed to the local team composed of Annelies van der Stoep, Lead, and Lichelle de Bruijn, Advisor, Province of Zuid-Holland (Netherlands) for the excellent collaboration throughout the policy dialogue, to Martin Ose and Solveig Stornes, Advisors, Møre and Romsdal County Municipality (Norway) for participating as peer-reviewers and to Lucie Blondel, Policy Officer (DG RTD, European Commission for sharing her expertise).

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Executive summary

Home to major cities such as The Hague and Rotterdam, the Province of Zuid-Holland hosts around one-fifth of the Dutch population. It stands out for its intensive greenhouse horticulture and a wide variety of industrial clusters such as petrochemicals, medical technology, aerospace and maritime activities. In 2020, Zuid-Holland accounted for 30% of the country's material streams.

The COVID-19 pandemic and escalating geopolitical risks have underscored the critical importance of resource management due to value chain disruptions and scarcity of critical materials, urging the province to take action towards a circular approach able to keep resources in use in the economy, increase self-sufficiency and shorten loops across businesses.

In 2020, the province launched the *Strategy Circular Zuid-Holland: Accelerating Together*, which aims to cut the use of primary raw materials (minerals, metals, and fossil carbon resources) by 50% by 2030 relative to 2016 levels, with the goal of achieving full circularity by 2050. The strategy is set to be updated in 2024, building on contributions from stakeholders from various sectors, consulted during the development of the Strategy to identify key areas of work.

Beyond the strategy, several circular-related initiatives are underway in Zuid-Holland. For instance, as part of the Association of Dutch Provinces (IPO), Zuid-Holland aims to accelerate innovation; connect with small and medium-sized enterprises (SMEs); and intensify its partnership with “*Versnellingshuis Nederland Circulair!*”, a joint venture organisation helping businesses with their circular transition. Through the “Chances for West” programme, Zuid-Holland funds circular economy projects across businesses. Moreover, the province supports capacity building programmes such as the CIRCO Tracks, a three-day programme designed for sector-specific companies to enhance their circular practices and embrace innovative circular business models.

However, based on the results of applying the OECD Scoreboard on the Governance of the Circular Economy and interviews with 50+ stakeholders, this paper identifies three main challenges in advancing towards a circular economy in Zuid-Holland. First, numerous small-scale business initiatives exist but they face difficulties in scaling up due to regulatory barriers, the absence of secondary markets and financial risks. Second, in a province characterised by its energy- and material-intensive industries, there is a need to strengthen the link between energy-circular and industrial policies, to yield co-benefits for society and businesses. Third, the lack of physical “space” is an issue: despite the presence of several “hubs”, such as the Green Village in the city of Delft, businesses report a shortage of space for experimentation, storage, and sharing initiatives as a prominent obstacle to moving from a linear to a circular economy. To accelerate the transition towards a circular economy, this case study uses the OECD 3Ps (people and firms, policies and places) framework and proposes the following ways forward:

→ *People and firms*: Zuid-Holland could help scale up circular businesses by facilitating dynamic interactions between innovative niche actors (mostly SMEs) and established actors (mainly large players). Although this approach is in its infancy within the current circular economy strategy, the province, acting as a connector, could: facilitate innovation by reducing the time and cost of bringing innovative ideas to the market, offering greater access to finance, and incorporating consumer-

protection safeguards into regulation; develop guidelines to provide practical advice and relevant case studies to help businesses implement circular economy practices more effectively; and foster a supportive environment for a sustainable circular economy in the long run.

- **Policies:** Adopting a systemic approach could align circular economy initiatives with industrial and energy policies in Zuid-Holland. Beyond updating the Strategy Circular Zuid-Holland in 2024, the province plans to publish a strategy for a circular industry to improve energy and feedstock efficiency. The province could further strengthen this systemic approach by: i) promoting design for circularity, encouraging industries to adopt design principles that prioritise durability, reparability, recyclability and innovative business models such as *Product as a Service*; ii) facilitating collaboration and partnerships among businesses to promote the reuse of resources and minimise waste generation; and iii) conducting resource efficiency audits and providing technical assistance to implement energy-efficient technologies and minimise resource losses.
- **Places:** The spatial dimension plays a pivotal role in the circular economy transition, urging Zuid-Holland, where 235 000 new houses will need to be built by 2030, to shift from a “competition for space” to a space-sharing paradigm. Essential steps for this shift include: adopting a holistic approach to spatial planning through modular and flexible infrastructure and shared facilities and equipment; evaluating vacant spaces that could be used to host circular economy activities (e.g. spaces for experimentation, collaboration, exchange and storage); promoting mixed-use developments allowing for multi-purpose spaces blending residential, commercial, and industrial spaces; and implementing collaborative platforms across property developers, businesses and government. Leveraging digitalisation, including blockchain, digital data collection and digital twins, could help map building materials that represent urban mining for reuse and recycling, store information about building materials for future constructions, and enable real-time business demand for material exchanges.

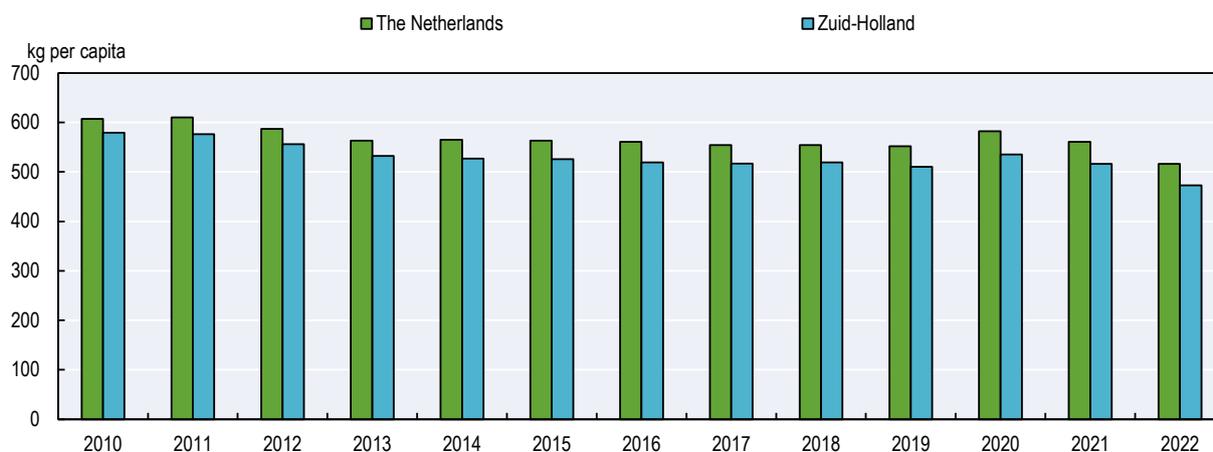
1 Snapshot of Zuid-Holland

The province of Zuid-Holland is located in the West Netherlands. Home to major cities such as The Hague, Leiden and Rotterdam, the province concentrates one-fifth (21%) of the national population (Statistics Netherlands, 2023^[3]). Between 1995 and 2023, Zuid-Holland's population increased by 14% from 3.3 million to 3.8 million people (AlleCijfers, 2023^[4]), slightly below the national population growth for the same period (15%) (Statistics Netherlands, 2024^[5]). Population density is 1 391 inhabitants per square kilometre (km²), much higher than the national average of 523 per km². In 2023, households were predominantly composed of one person (41%) (Statistics Netherlands, 2023^[6]), with impacts on energy consumption, as smaller households consume more energy per capita on average (Brounen, Kok and Quigley, 2012^[7]). In 2023, 27% of the population of Zuid-Holland had completed primary education, 40% secondary education and 31% tertiary education (AlleCijfers, 2023^[4]). The province hosts 3 out of 200 top global universities (i.e. Delft University of Technology, Leiden University and Erasmus University Rotterdam) (QS, 2023^[8]).

Zuid-Holland generates one-fifth (21%) of the Netherlands' gross domestic product (GDP) and its GDP per capita has increased by 22% in the last decade, from EUR 39 605 in 2011 to EUR 48 548 in 2021 (Statistics Netherlands, 2023^[9]). Meanwhile, the Dutch economy grew by 27% in the same period, reaching EUR 49 650 per capita in 2021 (Eurostat, 2024^[10]). The province is well-known for its intensive greenhouse horticulture and a wide variety of economic clusters such as petrochemicals, medical technology, aerospace and maritime industries. It hosts the Port of Rotterdam, the world's tenth biggest container port in 2021 and the largest in Europe, with a surface of over 12 600 hectares (World Shipping Council, 2023^[11]; Port of Rotterdam, 2023^[12]). In 2022, the province identified 23 210 companies (representing approximately 5% of all companies) focusing on circular economy principles, mainly on repairing (Royal HaskoningDHV, 2022^[13]). In the third quarter of 2023, unemployment in Zuid-Holland reached 4%, which was higher than the national average of 3% for the same quarter.

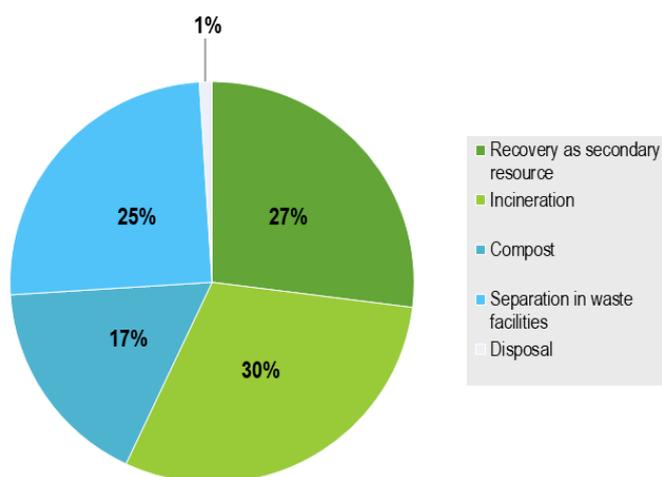
In 2020, Zuid-Holland used 30% of national material streams and accounted for 12 million tonnes (Mt) of domestic material consumption (DMC), or 7% relative to the 169 Mt DMC of the Dutch economy during the same year (OECD, 2024^[14]). Municipal waste production in Zuid-Holland dropped by 10% from 2012 to 2022 (from 1.9 Mt to 1.7 Mt). In 2022, Zuid-Holland produced 473 kg per capita of municipal waste,¹ below the national average of 512 kg per capita (Statistics Netherlands, 2023^[15]) (Figure 1.1). Household waste represented 91% of municipal waste in 2022. In the same year, municipal waste was mainly incinerated for energy recovery (Figure 1.2) (Statistics Netherlands, 2023^[15]).

Figure 1.1. Municipal waste generation per capita in Zuid-Holland and the Netherlands, 2010-2022



Source: Statistics Netherlands (2023_[15]).

Figure 1.2. Municipal waste treatment in Zuid-Holland, 2022



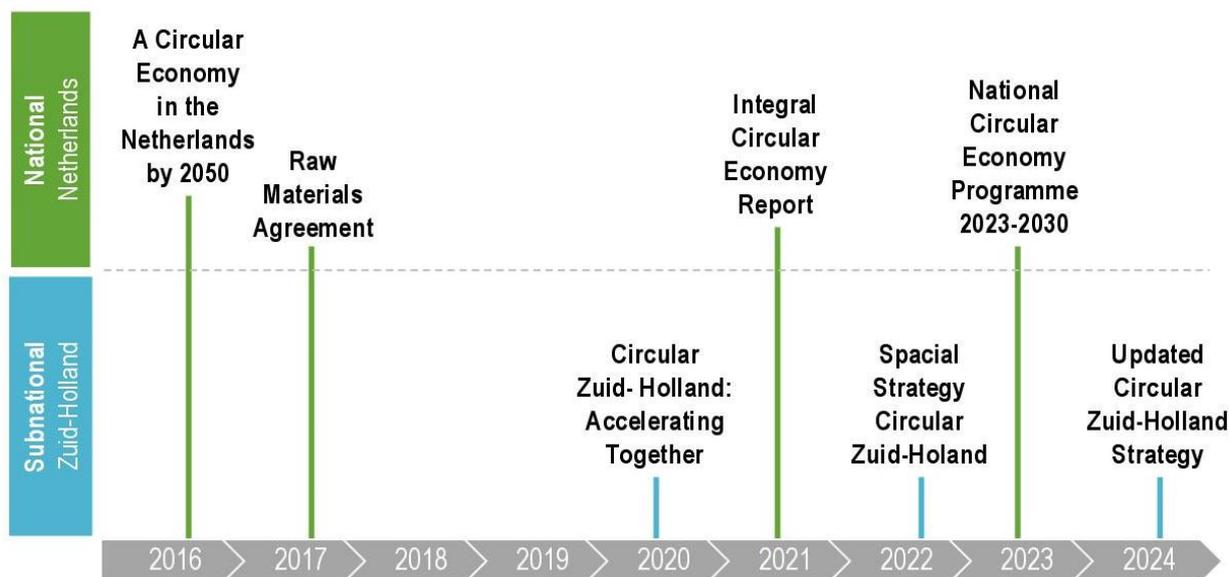
Source: Statistics Netherlands (2023_[15]).

2 Zuid-Holland's circular journey

First steps

The circular economy transition in Zuid-Holland is at an early stage (Figure 2.1). In 2020, the province launched the *Strategy Circular Zuid-Holland: Accelerating Together* (Province of Zuid-Holland, 2019^[16]). The strategy aligns with the environmental goals of the 2016 national strategy *A Circular Economy in the Netherlands by 2050*. Specifically, it aims to reduce the use of primary raw materials (minerals, metals and fossil carbon resources) by 50% by 2030 compared to 2016 levels and to reach full circularity by 2050. The strategy is also in line with the Dutch government's 2017 *Raw Material Agreement* (Government of the Netherlands, 2017^[17]). According to the 2023 OECD Circular Cities and Regions Survey, the main drivers for a circular economy in the Province of Zuid-Holland include boosting innovation, creating added value and tackling climate change (OECD, 2023^[18]). Moreover, the provincial circular economy strategy underscores the relevance of the circular economy in creating jobs and strengthening the competitiveness of the province. It focuses on four action themes (construction, plastics, bio-based resources and food, and manufacturing industry) and five cross-cutting action lines, developed in consultation with different stakeholders in the province (Table 2.1) (Province of Zuid-Holland, 2019^[16]).

Figure 2.1. Circular economy policy timeline in Zuid-Holland, Netherlands



Source: Authors' elaboration.

Table 2.1. Action themes of the “Circular Zuid-Holland: Accelerating Together” strategy

| Theme | Objectives | Cross-cutting actions |
|------------------------------|--|--|
| Construction | <ul style="list-style-type: none"> → Scale up circular and climate-neutral construction and urban innovation. → Make optimal use of procurement policy to accelerate the adoption of circular construction, management and maintenance of infrastructure. → Stimulate the development of business parks. | <ul style="list-style-type: none"> → Boost network and chain co-operation: by encouraging, facilitating and financing partnerships and networks for each action theme in collaboration with municipalities. → Share knowledge and innovation by making all knowledge transparent and available to policy makers, entrepreneurs, knowledge institutions and social partners to foster a well-functioning circular economy. → Update policy and regulations through licensing, supervision, enforcement, granting exemptions and experimental space for reuse of residual flows, under the “Act on General Provisions for Environmental Law (2010)”, the “Environmental Management Act (2004)” and the “Environmental Act (2024)”. → Design and organise the physical living environment through a new spatial strategy to ensure a territorial and functioning circular economy. → Improve public procurement to create demand for a circular economy (see Box 2.1). |
| Plastics | <ul style="list-style-type: none"> → Turn the Port of Rotterdam into a strategic plastics hub. → Close small and medium-sized enterprises’ plastics loops with smart innovation for the port and the construction sector as major waste producers. → Close regional flows of microplastics at the regional scale. | |
| Bio-based resources and food | <ul style="list-style-type: none"> → Strengthen innovative frontrunners and international competitiveness through circular knowledge and new revenue models. → Invest in the provincial agricultural sector and sustainable food systems to shorten food chains and close both soil and nutrient cycles within the province. → Valorise residual biomass flows. | |
| Manufacturing industry | <ul style="list-style-type: none"> → Support smart/high-tech manufacturing companies in material and product innovation and digitalisation. → Develop a maritime cluster for maritime manufacturing and circular value chains. → Foster a circular-driven energy transition for energy products, installations and services. | |

Source: Province of Zuid-Holland (2019_[16]).

Updating the province’s circular strategy

Zuid-Holland is currently updating its circular strategy, with completion targeted for 2024. Building on the environmental goals of the 2020 circular strategy, the revised strategy will respond to new challenges in terms of value chain disruptions and the scarcity of critical materials, in light of the COVID-19 pandemic and the Russia’s war of aggression against Ukraine (OECD, 2021_[19]). These shocks have increased attention of the need for resilience to face shocks such as the cost of living, food and energy crises.

Acknowledging the challenge of meeting the initial goal to reduce the use of primary raw materials by 50% by 2030, the new strategy aims to set more realistic objectives while still aspiring to achieve 100% circularity by 2050. At the national level, the 2023-2030 National Circular Economy Programme (NCEP) has been adopted and operationalises the national goal of reaching full circularity by 2050. It introduces a mix of pricing, standard-setting and incentive measures to achieve these targets (Government of the Netherlands, 2023_[20]).

The strategy will focus on updating provincial regulations and leveraging economic and information tools to facilitate the transition to a circular economy. Improvements are also planned in terms of developing new networks and partnerships. The province will continue to focus on refurbishment and repair activities, complementing existing recycling plans. Lessons learnt from the 2020 circular strategy call for a more systemic approach, building on co-creation with stakeholders from various sectors. Finally, the new strategy intends to create a more consistent bridge with the 2022 Circular Zuid-Holland Economy Spatial Strategy.

Box 2.1. Moving towards circular public procurement in Zuid-Holland, Netherlands

The Province of Zuid-Holland purchases approximately EUR 350 million worth of works, supplies and services every year. In the Netherlands, the annual volume of public procurement amounted to EUR 85 billion in 2020, of which EUR 25.8 billion (30%) were spent by the national government, EUR 2.1 billion (2%) by the provinces, EUR 28.8 billion (34%) by the municipalities and the remaining EUR 28 billion (34%) by other governmental organisations. The 2023-2030 National Circular Economy Programme introduces new standards and incentives to ensure sustainable public procurement policies. Standard-setting measures include the endorsement of the “*Manifest for Socially Responsible Commissioning and Procurement* (MVOI Manifest)” by public organisations and local governments, as well as improved sustainable public procurement criteria. Stimulus measures include a roadmap for the implementation of the MVOI Manifest; support for circular procurement and buyer groups; and the Netherlands’ participation in the Circular and Fair Information and Communication Technology Pact, an international network to promote sustainable practices by prolonging the lifespan of electronic devices in use; setting minimum criteria for tenders based on aspects such as longevity, reparability and security updates; and sharing other circular principles.

The Province of Zuid-Holland uses a variety of tools to promote sustainable practices, such as sustainable public procurement criteria, and a web tool to help organisations apply the ISO 20400 on Socially Responsible Purchasing. These tools are complemented by procurement strategies, support for buyer groups (e.g. research, knowledge, purchasing advice) and the Circular Procurement Acceleration Network (*Versnellingsnetwerk Circulair Inkopen*, VCI in Dutch). VCI connects public organisations to one another to facilitate the integration of circular principles into their procurement activities, from understanding what circularity means in procurement to selecting the right products.

Regarding the building and construction sector, Zuid-Holland plans to set up by 2028 an interprovincial agreement aimed at achieving energy and carbon neutrality. In 2023, the province set minimum procurement requirements for carbon emissions and the use of secondary materials in provincial infrastructure projects. Tools such as Building Information Modelling (BIM) and Madaster, a digital registry of materials and products, are in place to develop digital twins of buildings and estimate their circular value, reuse potential and future renovation needs.

In addition, the province is linking procurement with circular innovation. For example, the Startup in Residence Programme identifies infrastructure challenges for which start-ups can provide solutions incorporating circular economy principles. The programme aims to include successful ideas in new tendering processes to help scale up innovative solutions.

Sources: Province of Zuid-Holland (2023^[21]; 2023^[22]); Government of the Netherlands (2021^[23]; 2023^[24]; 2023^[20]).

Between 2020 and 2023, the provincial budget for the circular economy tripled (from EUR 750 000 to EUR 2.5 million). However, it dropped to EUR 1.75 million in 2024. The budget draws on a provincial fund and a provincial tax on motor vehicles in the provinces (i.e. *Opcenten motorrijtuigenbelasting*). The Province of Zuid-Holland expects to receive additional financial resources from the national government to support the circular economy transition, as it has been the case for the energy transition (e.g. grants for business investment, support for innovation, tax credits) (Government of the Netherlands, 2023^[25]). The province also plans to apply for European Union funding on an individual project basis.

3 Challenges and opportunities for Zuid-Holland's circular transition

The self-assessment carried out by the Province of Zuid-Holland, based on the OECD Scoreboard on the Governance of the Circular Economy in Cities and Regions (Figure 3.1), points out governance gaps in terms of regulation, policy coherence, capacity building, data and assessment, and co-ordination, which scored the lowest among the 12 key governance dimensions (Box 3.1). Although circular-related initiatives exist at national, provincial and local levels, their implementation often remains siloed and lacks a systemic approach. Moreover, although the province is in charge of supporting the business community in its circular transition, it does not have the competences to support local authorities. Local authorities oversee waste collection, performed in different modalities across municipalities and can influence changes in consumers' demand, through awareness raising, circular public procurement, etc. Additionally, while statistics on the circular economy are improving, the province acknowledges that current indicators are not suited to guide effective policy making. The province collects data on material flows, but indicators to measure the impact of the circular strategy in terms of job creation, access to circular services and societal uptake, are yet to be developed. Zuid-Holland has the potential to promote, facilitate and enable the circular economy to help fully seize its benefits (Table 3.1, Table 3.2 and Table 3.3).

Figure 3.1. The OECD Scoreboard on the Governance of the Circular Economy in Zuid-Holland



Source: OECD (2023^[18]) based on OECD (2020^[2]).

Box 3.1. The OECD Checklist for Action for the Circular Economy in Cities and Regions

The OECD Checklist for Action, based on 12 key governance dimensions, provides guidance to governments to promote, facilitate and enable the circular economy. It is divided into three clusters that reflect the complementary roles of cities and regions in the circular economy:

- Promoters: Cities and regions can lead by example, communicate clearly, and set goals and targets for the circular economy. They can do this by clarifying roles and responsibilities, developing a circular economy strategy, and promoting a circular economy culture and transparency.
- Facilitators: Cities and regions can support dialogue and collaboration and provide infrastructure and services for circular businesses. They can do this by implementing effective multi-level governance, fostering policy coherence, engaging stakeholders and adopting a functional approach.
- Enablers: Cities and regions can create the conditions for the circular economy to thrive, e.g. adapting regulations, mobilising financing, building capacities, supporting innovation, and generating data and assessment.

Figure 3.2. The 12 governance dimensions of the OECD Checklist for Action



The Checklist is accompanied by the OECD Scoreboard on the Governance of the Circular Economy in Cities and Regions, a self-assessment tool for governments aiming to assess their advancement towards the implementation of each of the 12 governance dimensions. The OECD Scoreboard offers to cities and regions undertaking the assessment:

1. An overview of the current situation concerning the 12 governance dimensions to base decision-making processes on facts and clear objectives
2. Guidance to improve policy areas needed to promote, facilitate and enable the circular economy transition
3. A tool for dialogue in multi-stakeholder processes to improve policies and tools, raise awareness about the opportunities of the circular economy, and build consensus on the main challenges and potential ways forward.

In September 2023, the Province of Zuid-Holland conducted a self-assessment of the progress towards a circular economy, as visualised in Figure 3.1. For each dimension of the Scoreboard, the Province provided: a score, a description of the governance dimensions and the level of implementation. The

OECD Secretariat integrated considerations on the level of implementation and provided recommendations to overcome the gaps, thanks to the interviews with elected representatives of the Province of Zuid-Holland and seven thematic discussions with over 50 stakeholders from public, private, academic, and social entities during the OECD mission to the Province of Zuid-Holland (24-26 October 2023) (Table A A.1).

Source: OECD (2020_[2]).

Table 3.1. Applying the OECD Scoreboard and Checklist for Action in Zuid-Holland: Promoters

| Evaluation of governance dimensions through the OECD Scoreboard on the Governance of the Circular Economy | Ways forward based on the OECD Checklist for Action |
|--|--|
| <p>Roles and responsibilities <i>In place, partly implemented</i></p> <p>The Province of Zuid-Holland has responsibilities in spatial planning, environment, water, landscape, regional economy and transport infrastructure. It supervises and approves annual municipal budgets. One of the seven provincial ministers is responsible for the economy, innovation, environment and the circular economy. Their role is to foster the inclusion of the circular economy in the policy agenda and to co-ordinate actions with other provincial governments in the Netherlands. The Economic Affairs Bureau of the Department of Society and Economy is in charge of co-ordinating and operationalising the provincial circular economy strategy through: promoting networking and supply chain co-operation, developing and sharing knowledge, updating policies, designing physical living environment, and updating tendering processes regarding circular strategies. Regarding the implementation of the 2023-2030 National Circular Economy Programme and the 2022 National Resource Strategy, the role of the province has not been clarified. Nevertheless, the province has commissioned a study to clarify its role in relation to critical raw materials.</p> | <ul style="list-style-type: none"> → Map roles and responsibilities of each provincial department in the circular transition and identify implementation bottlenecks to be overcome in co-ordination with other levels of government. → Promote an inter-departmental dialogue on the circular economy, including on circular procurement, to sustain the demand of circular services in the long term. |
| <p>Strategic vision <i>In place, partly implemented</i></p> <p>The Province of Zuid-Holland published the Strategy Circular Zuid-Holland: Accelerating Together in 2020, which will be updated in 2024. It focuses on four themes: construction; plastics; bio-based resources and food; and manufacturing industry, echoing the priorities and goals of the 2016 national circular economy strategy. It also gathers practical examples of circular economy actions within the province in relation to the four themes. The strategy is not accompanied by a specific budget for its implementation. The province is aware of the difficulties of reaching the 2030 interim goal due to the current stage of circular economy interventions in the province.</p> | <ul style="list-style-type: none"> → Set a realistic intermediate goal to ensure the goal full circularity by 2050. → Identify concrete targets to enable evaluation and monitoring. → Clearly link the strategy to a budget. → Intensify co-creation with public and private organisations, knowledge institutions, and residents of Zuid-Holland to scale up existing (small-scale) initiatives. → Involve municipalities within the province in the implementation of the strategy. Their proximity to citizens can complement the activities that the province is carrying out for the business sector. |
| <p>Awareness and transparency <i>In place, partly implemented</i></p> <p>The Province of Zuid-Holland has developed a website to showcase more than 100 activities regarding the action themes and lines included in the <i>Strategy Circular Zuid-Holland: Accelerating Together</i>. The province organises “circular dialogues”, thematic innovation network events (e.g. bio-based construction, reusable plastics, natural residual flows) with stakeholders around the four themes of the provincial strategy, match-making events for businesses and entrepreneurs, as well as open events for the general public. However, businesses are not aware of the different regulatory and economic instruments available for the transition to a circular economy. While this is not a competence of the province, but of the municipalities, the involvement of citizens in the transition to a circular economy is largely missing.</p> | <ul style="list-style-type: none"> → Communicate on the progress achieved in the transition towards a circular economy in the province, referring to specific targets of the strategy. → Inform the business sector clearly and regularly about tools and instruments available to support them financially and build capacities. → Foster co-ordination between local and regional focal points for small and medium-sized enterprises. → Further develop “circular dialogues” for sectors lagging behind and showcase the costs and benefits of the implementation of circular business models. |

Table 3.2. The OECD Scoreboard and Checklist for Action in Zuid-Holland: Facilitators

| Evaluation of governance dimensions through the OECD Scoreboard on the Governance of the Circular Economy | Ways forward based on the OECD Checklist for Action |
|---|---|
| <p>Co-ordination <i>In place, not implemented</i></p> <p>The Province of Zuid-Holland co-ordinates with other provinces through the Association of Dutch Provinces (IPO) and the “Chances for West” programme, among others. The IPO aims to accelerate innovation, connect with small and medium-sized enterprises, and intensify the partnership with “Versnellingshuis Nederland Circulair!”, a joint venture organisation helping businesses with their circular transition. Versnellingshuis Nederland Circulair! funds circular economy projects across businesses. Moreover, co-ordination meetings are held regularly between civil servants from the Province of Zuid-Holland and the Province of Noord-Holland to discuss potential cross-border issues regarding the implementation of the circular economy.</p> <p>A provincial minister is in charge of co-ordination with the national government. While agreements and platforms for dialogue are in place, implementation of the actions is still in an early stage, and will require actions co-ordinated with the national and local governments. In 2023, Dutch provinces signed an interprovincial call in response to the 2023-2030 National Circular Economy Programme, urging the central government to increase the national and provincial budgets for the circular economy (IPO, 2023^[26]).</p> | <ul style="list-style-type: none"> → Engage in dialogue with the national government to co-ordinate circular economy policies, funding schemes and regulation, as well as to improve its readiness for provincial and local experimentation and the related implementation. → Continue to foster inter-provincial formal collaboration to identify common implementation bottlenecks, leveraging the working group on the circular economy within the Association of Dutch Provinces. → Establish regular dialogue with municipalities in the province to consider options for the implementation of the circular strategy across the provincial area, complementing local and provincial competences on waste management for businesses (province) and households (municipalities). |
| <p>Policy coherence <i>In development</i></p> <p>The province of Zuid-Holland has developed a series of strategies linked to the circular economy, such as the 2022 Circular Zuid-Holland Spatial Strategy and the forthcoming strategy on the circular energy transition. The forthcoming strategy on the circular energy transition is part of the provincial task on sustainable industry and targets both the energy and circular transition. It foresees a three-step approach: 1) improve energy and feedstock efficiency; 2) renew the energy system, moving from fossil to renewable energy sources; 3) renew the feedstock and fuel system, from a fossil to sustainable system. The circular economy is part of the third step. To reach the energy and circular transition targets, the province works together with partners (e.g. Porthos project), offers subsidies to businesses and attempts to speed up varying processes (e.g. permits, spatial planning) to facilitate sustainable industrial plans. Although Zuid-Holland’s environmental policy* includes energy, circular economy and industrial objectives, implementation of policies are not integrated and are applied in silos.</p> | <ul style="list-style-type: none"> → Continue developing a systemic approach for the circular economy with the collaboration of all provincial departments to avoid policy silos and identify new opportunities for policy coherence (e.g. agriculture, bio-based material and activities). → Ensure that circular economy policy goals are supported by effective instruments for implementation, such as regulations, standards or subsidies, which will require co-ordination with national and local levels of government. |

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| <p>Stakeholder engagement <i>In place, partly implemented</i></p> <p>Collaboration with knowledge institutions and private and not-for-profit actors are in place in areas such as innovation, industrial clusters in the Port of Rotterdam and bio-based construction. Research projects such as Accelerating Circular Economy in Zuid-Holland (ACCEZ) have brought the province and three universities together to research and innovate in areas such as agriculture and horticulture. Given the province's administrative tasks, which put the province closer to businesses and local governments to citizens, residents are not consistently represented in decision making regarding the provincial circular economy strategy.</p> | <ul style="list-style-type: none"> → Create ecosystems among businesses and knowledge institutions to match the medium- and long-term needs for new professionals and skilled labour for the implementation of the circular economy strategy. → Provide regular updates to stakeholders that have contributed to the strategy, showcase progress and identify solutions to bottlenecks. |
| <p>Appropriate scale <i>In place, partly implemented</i></p> <p>The Province of Zuid-Holland has pioneered the development of a spatial strategy for a circular economy. Although mainly exploratory in nature, the 2022 Circular Zuid-Holland Spatial Strategy has kick-started multi-stakeholder dialogues for long-term development. Circular supply chains often cross municipal borders, and their functioning has been hampered by the multiplicity of permits required in every municipality or province to transport secondary materials.</p> | <ul style="list-style-type: none"> → Lead research collaboration to identify the amount of space that can be shared for circular economy actions within the province regarding innovation and businesses and define optimal scales to close, narrow and slow material loops. → Explore alternatives to place-based secondary resource storage by means of digital tools such as product passports, artificial intelligence and digital markets. → Harmonise permitting or develop cross-border agreements to help companies and citizens meet legal requirements. |

* <https://www.zuid-holland.nl/onderwerpen/omgevingsbeleid>.

Table 3.3. Applying the OECD Scoreboard and Checklist for Action in Zuid-Holland: Enablers

| Evaluation of governance dimensions through the OECD Scoreboard on the Governance of the Circular Economy | Ways forward based on the OECD Checklist for Action |
|---|---|
| <p>Regulation <i>In development</i></p> <p>Regulations continue to predominantly favour linear practices, influencing building codes, taxation and certification standards. The Provincial Court of Auditor's 2023 final report on the circular economy underscored the province's challenges in navigating the regulatory landscape, highlighting a need for clarity regarding the regulatory instruments at its disposal. The province is now examining regulation bottlenecks in spatial planning and bio-based buildings, through CircuLaw, which aims to accelerate the circular transition by showing which laws and regulations exist and how to apply them.</p> <p>A widely acknowledged impediment to circular economy innovations and solutions lies in the prevailing end-of-waste status. A permit system is in place for industrial waste, assigning the responsibility for waste-flow management to either municipalities or provinces, depending on the business size. The execution of these legal tasks involves five environmental agencies, adding layers to the already complex web of waste management regulations within the province.</p> | <ul style="list-style-type: none"> → Simplify multi-authority permit processes (e.g. waste/secondary resource transport) to accelerate the start-up and scale-up of circular businesses in the province. → Include minimum criteria for eco-design in public procurement processes, instead of end-of-pipe waste management solutions. → In a dialogue with the national government, other provinces and municipalities, the province could support municipalities in moving from a waste management to a circular management of resources. Municipalities have expressed a need for guidelines, common objectives and standards, financial resources, and capacities. Each municipality has its own waste collection rules, resulting in potentially valuable secondary resource being incinerated for energy generation instead of being repurposed. |

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| <p>Regarding public procurement, in 2023, provinces and municipalities set up the first guidelines for the procurement of green services. Zuid-Holland aims to take this effort further towards so-called procurement pacts and is working on action plans on socially responsible procurement and contracting for each department, based on the <i>Manifest for Socially Responsible Commissioning and Procurement</i>. The decentralised nature of waste management in the province adds further complexity to the regulatory landscape. Municipalities are responsible for household waste collection. Each municipality independently determines collection methods, separation processes and funding mechanisms. Waste treatment operates under a free market system. In 2023, the Ministry of Infrastructure and Water Management initiated a review to improve waste sorting and collection. * Harmonisation of methods and targets for waste management are needed to scale up environmental benefits. Although Zuid-Holland does not manage household waste, it is taking action to influence the prevention of business waste and the reuse of waste streams.</p> | |
| <p>Financing <i>In place, partly implemented</i></p> <p>Zuid-Holland tripled its circular economy budget between 2020 and 2023, followed by a budget reduction in 2024. The province expects to gather extra financial resources from the national government to support the circular economy transition. Nevertheless, following recent national elections, it is uncertain whether the national government will provide financial support to provinces for circular transition tasks. Despite the increased budget in 2020-23, funds remain insufficient to fully achieve the strategy's ambitious goals. Budgetary constraints are particularly acute in many medium- to small-sized municipalities. A common concern among local governments is that when a budget for the circular economy is available, a significant portion of it is allocated to employing personnel responsible for circular activities, leaving a limited budget for the implementation of the circular economy activities (e.g. awareness campaigns, events, capacity-building initiatives) these employees have been hired for.</p> <p>In the business sector, accessing private financing is reported to be a significant challenge, due to perceived risks, difficulties in financing an entire chain rather than a single company and a competitive disadvantage against linear activities that still dominate the market.</p> <p>Zuid-Holland has also provided subsidies for projects aimed at systemic change. The subsidy programme works in rounds; the first focused on natural residual flows from public space, the second on bio-based buildings. Two to four projects are funded per round. In 2023, each round allocated up to EUR 500 000 and EUR 700 000, respectively (Province of Zuid-Holland, 2023^[27]; 2023^[28]).</p> | <ul style="list-style-type: none"> → Explore public-private partnerships to share risks and pool financial resources needed for circular businesses to scale up existing initiatives. → Map existing national and European sources of funding for projects to prepare proposals in advance. → Consider striking inter-provincial agreements to fund and co-ordinate financial efforts towards common challenges and opportunities that may arise across Zuid-Holland and its neighboring provinces. → Incentivise strategies that are higher on the R-Ladder (Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, Recover) to prioritise them over incineration and recycling. |
| <p>Capacity building <i>In place, not implemented</i></p> <p>In 2023, the province employed 15 full-time equivalent workers for circular economy tasks. The Economic Board Zuid-Holland recognised the importance of circular jobs in its Human Capital Agenda 2.0. While this agenda promotes the development of skilled labour and advancements in information and communication technologies, there is a workforce bottleneck.</p> | <ul style="list-style-type: none"> → Complement the Human Capital Agenda 2.0 with a scan of circular economy-specific skills required in key sectors in the province. |

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| <p>Innovation</p> <p><i>In place, partly implemented</i></p> <p>The Province of Zuid-Holland shows an active approach to innovation. It supports supply chain and sector-based networks in areas such as bio-based building, reusable packaging, natural residual streams, solar panels, and logistics and port industries (Province of Zuid-Holland, 2022^[29]). Especially for the circular built environment, the Green Village in Delft serves as an experimental space where deviations from certain provisions of the Environmental Act are legally allowed, providing a platform to explore and test circular, regenerative and carbon-neutral solutions. Government initiatives, such as the Startup in Residence Programme and subsidy schemes for breakthroughs in bio-based construction and organic residuals valorisation, aim to stimulate entrepreneurial endeavours. Additionally, collaboration between the province and local governments, innovation tours, and challenges for bio-based construction encourage small and medium-sized enterprises to innovate and contribute to the development of circular solutions applicable in the province.</p> | <ul style="list-style-type: none"> → Explore the role of artificial intelligence in optimising supply chains, marketing, logistics and support functions and apply sandbox regulation, according with the competences of the province, to pilot and scale up circular businesses. |
| <p>Data and assessment</p> <p><i>In place, not implemented</i></p> <p>A <i>Circular Monitor</i> is in place (Randstedelijke Rekenkamer, 2023^[30]). The Circular Monitor 2021 and 2022 were published in early 2022 and 2023. It consists of a quantitative part and a qualitative part (the <i>voortgangsmagazine</i>). Furthermore, there is a biennial monitor dedicated to “circularity”. The next one is due at the end of 2024 and will focus on material streams but also on transition indicators such as jobs.</p> <p>Nevertheless, the Provincial Court of Auditors has raised concerns that current indicators do not adequately reflect the progress of the circular economy. Unlike the energy transition, there are no data to guide decisions on material flows, material scarcity, replacement of material or the secondary products market. Indicators measuring the effectiveness of the circular strategy in terms of job creation, access to circular services and societal uptake are yet to be developed.</p> <p>Although circular statistics are improving, the province recognises the inadequacy of indicators for policy making. In collaboration with third parties, the province has, therefore, conducted a preliminary mapping of resource streams in Zuid-Holland; the purchasing team of the province is reorganising its database to analyse how environmental and social aspects have been integrated into the purchasing and tendering processes of past and future projects; the Bureau for Infrastructure Maintenance is considering the Environmental Cost Indicator as an indicator for circularity. In addition to indicators on material flows (such as raw material input, direct material input, raw material consumption and domestic material consumption), the province will develop new indicators in relation to social and economic aspects, including the number of people working on circularity, the percentage of subsidies towards circular initiatives, etc.</p> | <ul style="list-style-type: none"> → Develop internal monitoring systems for circular economy activities within the province (e.g. procurement, tendering) and make the information publicly available. → Advocate for the establishment of country-wide monitoring systems to ensure vertical/horizontal alignment on sectoral circular economy goals. → Foster agreements for data exchange between the private sector and public organisations. |

* <https://www.rijksoverheid.nl/documenten/beleidsnotas/2023/10/02/onderliggende-beslisnota-beantwoording-kamervragen-afvalscheiding-is-een-grote-bende>.

4 Accelerating the circular economy transition in Zuid-Holland

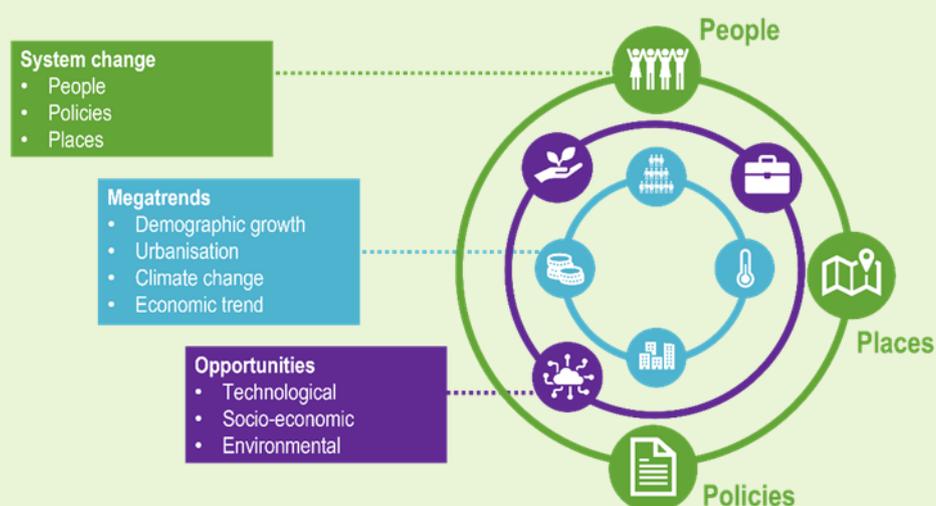
Based on the OECD 3Ps analytical framework – *People and firms, Policies, and Places* (Figure 4.1), the following key governance recommendations are highlighted for the Province of Zuid-Holland:

- *People and firms*: Zuid-Holland could help scale up circular businesses by facilitating dynamic interactions between innovative niche actors (mostly SMEs) and established actors (mainly large players). Although this approach is in its infancy within the current circular economy strategy, the province, acting as a connector, could: facilitate innovation by reducing the time and cost of bringing innovative ideas to the market, offering greater access to finance, and incorporating consumer-protection safeguards into regulation; develop guidelines to provide practical advice and relevant case studies to help businesses implement circular economy practices more effectively; and foster a supportive environment for a sustainable circular economy in the long run.
- *Policies*: Adopting a systemic approach could align circular economy initiatives with industrial and energy policies in Zuid-Holland. Beyond updating the Strategy Circular Zuid-Holland in 2024, the province plans to publish a strategy for a circular industry to improve energy and feedstock efficiency. The province could further strengthen this systemic approach by: i) promoting design for circularity, encouraging industries to adopt design principles that prioritise durability, reparability, recyclability and innovative business models such as *Product as a Service*; ii) facilitating collaboration and partnerships among businesses to promote the reuse of resources and minimise waste generation; and iii) conducting resource efficiency audits and providing technical assistance to implement energy-efficient technologies and minimise resource losses.
- *Places*: The spatial dimension plays a pivotal role in the circular economy transition, urging Zuid-Holland, where 235 000 new houses will need to be built by 2030, to shift from a “competition for space” to a space-sharing paradigm. Essential steps for this shift include: adopting a holistic approach to spatial planning through modular and flexible infrastructure and shared facilities and equipment; evaluating vacant spaces that could be used to host circular economy activities (e.g. spaces for experimentation, collaboration, exchange and storage); promoting mixed-use developments allowing for multi-purpose spaces blending residential, commercial, and industrial spaces; and implementing collaborative platforms across property developers, businesses and government. Leveraging digitalisation, including blockchain, digital data collection and digital twins, could help map building materials that represent urban mining for reuse and recycling, store information about building materials for future constructions, and enable real-time business demand for material exchanges.

Box 4.1. The OECD 3Ps framework: People and firms, Policies and Places

The 3Ps approach (People and firms, Policies, and Places) provides a conceptual framework to make the circular economy happen in cities and regions.

Figure 4.1. The OECD 3Ps framework: People and firms, Policies and Places



People are at the centre of a cultural shift towards new business and governance models within a circular economy. The circular economy is a shared responsibility across levels of government and stakeholders. The business sector can determine the shift towards new business models (e.g. using secondary materials, recycling, sharing, etc.). Knowledge institutions contribute to boosting innovation and research. Not-for-profit organisations are at the core of bottom-up initiatives in a wide range of sectors, such as food and the built environment, to raise awareness and build capacities. The role of these stakeholder groups is described below.

The circular economy calls for a holistic and systemic approach that cuts across sectoral policies. As one person's waste can be someone else's resource, the circular economy provides an opportunity to foster complementarities across sectors, such as environmental, regional development, agricultural and industrial policies.

Adopting a functional approach going beyond the administrative boundaries of cities and regions is important for resource management and economic development. Cities and regions are not isolated ecosystems but spaces for inflows and outflows of materials, resources and products, connected with surrounding areas and beyond. Therefore, linkages across urban and rural areas (e.g. related to agriculture and forestry) are key to promote local production and recycling of organic residuals to be used close to where they are produced and avoid negative externalities related to their transportation. At the regional level, loops related to a series of economic activities (e.g. to the bioeconomy) can be closed and slowed.

It is important to note that actions proposed and based on the 3Ps approach are neither compulsory nor binding. They represent suggestions, for which adequacy and feasibility should be carefully evaluated by each city/region, involving stakeholders as appropriate. In turn, the combination of more than one action can be explored, if necessary. Moreover, actions need to be prioritised, acknowledging that not all recommendations can be tackled at the same time. Steps taken towards a circular transition

should, therefore, be progressive, according to the needs and the capacity of the city/region. When prioritising and assessing the adequacy and feasibility of the suggested actions, the resources needed to put these actions into practice should be carefully evaluated, as well as the role of stakeholders who can drive the implementation forward. Finally, proposed actions should be updated in the future as new steps and objectives may emerge as actions start to be implemented. Implementation will not be possible without engaging several stakeholders and levels of government.

Source: OECD (2020^[2]).

People and firms

Scale up circular businesses

While there is a growing awareness about the benefits of the circular economy in terms of resource management and supply chains, companies in Zuid-Holland tend to perceive circular business models as less profitable than linear ones and riskier for the financial sector. The main challenge is that circular business models are applied at a small scale with limited visible benefits for the environment and the economy. The province could consider the following actions based on transition management theories, aiming to create dynamic interactions among niche and regime actors, breaking path dependencies that hinder the adoption of circular solutions:

- **Facilitate dynamic interactions among niche actors**, as sources of innovation (mostly represented by SMEs) **and regime actors**, focusing on established practices (mainly large players). Within a dynamic interaction, regime actors can become more innovative through the influence of niche actors. For this to happen, the revised strategy could: create market opportunities (e.g. stimulate a dialogue between niche actors and procurement officers to seek innovative ideas); contribute to implementing necessary conditions to carry out economic activities (e.g. logistics).
- **Learn from experiments**. Companies aiming to introduce circular economy principles need to experiment with new technologies, business models or supply chain approaches and learn from results. Based on these learnings, the province could develop *guidelines* to provide practical advice, step-by-step instructions and relevant case studies to help businesses implement circular economy practices more effectively. It could also gather *case studies* to provide insights on the challenges faced, and outcomes achieved. Finally, it could host *workshops* to gauge how to support the business community further.
- **Move to smart regulation**. As part of a broader policy mix, regulatory sandboxes (a form of regulatory waiver or flexibility, enabling firms to test new business models with reduced requirements) represent a move toward “smart regulation”, providing proportionate regulation to innovative firms while managing risks at an appropriate level (OECD, 2023^[31]). They facilitate innovation by reducing the time and cost of bringing innovative ideas to the market, offering greater access to finance and incorporating consumer-protection safeguards to manage risk-averse preferences.
- **Incentivise the adoption of strategies that are higher on the R-Ladder (Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, Recover) in business development**. Beyond circular economy grants and funds, which are already in place, the province could involve *impact investors* to catalyse innovation, scale up circular business models, and drive positive societal and environmental outcomes. In addition, *revolving loan funds* could help businesses access capital while funds are recycled to finance circular economy investments.

International practices

- Since 2017, the **Greater London Authority, United Kingdom** through ReLondon, has supported businesses, investors and public sector organisations in accelerating the circular economy transition through the Circular Economy Matchmaker,* a digital platform to identify and bring together like-minded actors to develop a business case. Up to 2023, 107 businesses had received support, 183 matches had been enabled and 21 public-private partners had joined forces to identify circular solutions through ReLondon.
- The city of **Amsterdam, Netherlands**, through the Amsterdam Climate and Energy Fund (ACEF) and the Sustainability Fund, has invested in more than 65 projects related to climate, sustainability and air quality for a total budget of EUR 30 million. These are revolving funds, allowing to reinvest revenues within 15 years to finance additional sustainable energy production, energy efficiency or circular economy projects. Each of the funded projects must contribute to the aims of the sustainability agenda approved by the City Council in 2015. Regarding the nature of the financing, the ACEF provides funding in the form of loans, warranties and/or share capital, subject to a maximum of EUR 5 million per project.
- In 2022, **France** established a procedure to authorise new uses of treated wastewater, with a cap of five years for innovative uses. This procedure has served as a regulatory sandbox for experimenting with innovative wastewater reuse. Regulatory sandboxes are policy instruments that facilitate small-scale, live testing of innovations in a controlled market-like environment. Sandboxes are typically employed in cases where the emerging technology is potentially disruptive. It allows testing innovative technologies and business models that are not fully compliant with current rules and regulations, by temporarily suspending certain mandatory provisions or requirements for those who participate in the sandbox.

* <https://cematchmaker.com>.

Sources: OECD (2020^[2]; forthcoming^[32]).

Policies

Combine the energy, industrial and circular transitions

The energy transition towards renewable energy sources, the industrial transition towards the decarbonisation of industrial sectors and the circular economy transition fostering more efficient management of resources and materials are often applied in silos. However, integrating them could help achieve shared environmental, social and economic benefits. Circularity in the industrial landscape depends on the adoption of circular design principles, closed-loop systems and collaboration to reduce waste and foster circular business models that maximise energy and resource efficiency. Industries can prioritise designing products for disassembly and reuse, promoting an approach where waste from one process becomes a valuable resource for another. Additionally, emerging practices of waste heat recovery can capture and repurpose thermal energy generated during industrial processes.

In the Netherlands, at the national level, the 2016 Energy Agenda has set a target of reaching 100% sustainable energy by 2050. The 2018 national Climate Agreement and its adoption by Zuid-Holland in 2019 have paved the way for the 2020-23 provincial implementation programme “Clean Energy for Everyone”². In 2018, renewable energy only accounted for 5.2% of total generation in Zuid-Holland, and the province’s largest source of renewable energy was waste incineration for energy production (20%)³. The implementation programme has adopted the national goal of reducing carbon emissions by 49% by 2030. The provincial energy policy has been met with an overall high level of acceptance and compliance by businesses. In 2021, the national government published its Vision on Industry in the Netherlands,⁴ which included the circular economy as a key enabler of a future national industrial policy. Zuid-Holland does not have an industrial strategy of its own (OECD, 2023_[18]), but it has competences in sustainable industry and aims to publish an integrated energy and industry strategy in 2024, taking into account circular economy principles. The province also offers several grant schemes for investments in sustainable energy, such as the Renewable Energy Grant Scheme (SDE+), the Sustainable Energy Investment Grants (ISDE) and the Energy Investment Tax Credit.

The province could develop the following approaches to better integrate the energy, industrial and circular transitions:

- **Promote design for circularity.** The province could encourage industries to adopt design principles that prioritise durability, reparability, recyclability at the end of life and disassembly. It could also promote innovative business models such as Product as a Service, where companies own products and provide them to customers as a service. This incentivises manufacturers to design more durable and easier to maintain products while reducing resource consumption and waste generation.
- **Focus on reusing and recycling.** In its integrated strategy for circular, energy and industry transitions, the province could foresee material exchange platforms, including digital ones, where industries can exchange surplus materials, components or by-products. The province could facilitate collaboration and partnerships among businesses to promote the reuse of resources and minimise waste generation.
- **Conduct resource efficiency audits and provide technical assistance.** The audits or assessment would help identify opportunities for improving resource use and reducing waste generation. The province could also provide technical assistance to industries to implement energy-efficient technologies and minimise resource losses.
- **Spur innovation and digitalisation.** Digitalisation in industrial energy systems can increase productivity and the flexibility of industrial processes, to reduce energy consumption and greenhouse gas emissions, and improve the integration of renewable sources of energy.⁵ The Province of Zuid-Holland can use different

tools, such as: digital twin technologies, collect real-time data on material flows and leverage

blockchain technology to enhance traceability and transparency throughout the supply chain.

International practices

- Since 2018, a number of regions have participated in the European Commission's Pilot Action on Regions in Industrial Transition. The High Impact Actions developed by the regions and collected by the OECD provide valuable insights on new ways of approaching the complexity of the industrial transition, including in relation to the decarbonisation and the circular economy. For example, **Wallonia, Belgium**, has tested a challenge-oriented innovation call to support small and medium-sized enterprises in addressing market needs and societal challenges within the plastics value chain. Wallonia has fostered a collaborative environment among innovation actors, tapping into collective expertise and resources. By focusing on a specific challenge and identifying the most promising solutions, the challenge-oriented approach has guided stakeholders in prioritising their efforts and investments, ensuring that resources were directed towards the areas of greatest need.
- **Washington (United States)** will be the first state in the United States to implement the extended producer responsibility (EPR) regulations for solar panels in 2025. Manufacturers are requested to fund collection and recycling for large photovoltaic panels. This will allow for driving recycling markets, especially on aluminium and glass, which are the primary components of solar panels. Efforts are underway to include solar panels in existing certification standards for recyclers to ensure responsible management of materials.

Sources: RSS, Cascadia Consulting and FCS Group (2023^[33]); OECD (2023^[34]).

Places

Move from the “competition for space” to a space-sharing paradigm

While the Province of Zuid-Holland is a pioneer in the Netherlands in the elaboration of a spatial strategy for the circular economy, “space” remains a major constraint for circular businesses to develop. The 2022 Circular Zuid-Holland Spatial Strategy (Province of Zuid-Holland, 2022^[35]) recommends improving infrastructure systems for water, waste, energy and transport; building a spatial network of circular material chains for sourcing, producing and processing circular activities within the province; and fostering partnerships between residents, provincial and local governments, entrepreneurs, civil society organisations, and knowledge institutions for collective action. The province has also launched a Circular Area Development Compass (Over Morgen, 2022^[36]) for municipalities, with guidelines to indicate which policy instruments are involved in each step of a project’s development. In 2022, the Province of Zuid-Holland started providing a subsidy to support projects and consortia aiming to set up high R-ladder strategies, such as on biostreams and bio-based building (Province of Zuid-Holland, 2023^[37]; 2023^[38]). Due to the projected population increase in Zuid-Holland, it is estimated that 235 000 new houses will need to be constructed by 2030. In addition, to develop circular businesses, space for experimentations and pilots will be needed, beyond infrastructure to store and process material. The province could consider the following recommendations to move from the “competition for space” to the space-sharing paradigm:

- **Adopt a more holistic approach to spatial planning and zoning.** The province could further integrate circular economy principles into urban planning, allowing for multi-purpose spaces blending residential, commercial and industrial spaces where possible. This could help reduce urban sprawl and allow for sharing resources while reducing transport and logistical challenges.
 - **Rethink the planning of common and public spaces in line with circular principles,** including durability, adaptability and disassembly. Possible techniques include: modular and flexible infrastructure that can be used in different ways over time; shared facilities and equipment; urban agriculture and multi-functional spaces. In line with the competences of the province, such an approach could help municipalities share knowledge and expertise.
 - **Identify vacant spaces and evaluate their use.** The province could identify vacant spaces and buildings that could be used to host circular economy activities, including spaces for experimentation, collaboration, exchange and storage.
 - **Evaluate land use for circular parks.** Circular parks consist in the exchange of material, energy and information across a certain business community (beyond the Port of Rotterdam). The province could assess land-use planning and zoning to analyse transport connections, for example.
- Leverage digital technologies** such as digital twins, smart sensors and data analytics, to help carry out an inventory of building materials that represent urban mining for reuse and recycling, store information about building materials for future constructions, and optimise the use of shared spaces. Digital marketplaces can enable real-time business demand for material exchanges to avoid the need for long-term storage.

International practices

- **Singapore** is a densely populated city with limited space for farming. Therefore, it uses vertical urban farming, commercial rooftop farming, floating ponds to locate fish farms anywhere within the urban environment, indoor agriculture and farming in mixed-use districts as creative ways for food production. Framing this kind of innovation has required testing and experimentation to understand how to produce food within specific land and water constraints.
- The “**Two Banks District**” in **Paris, France**, is the first “circular district” in Paris, aiming to bring companies together to jointly design innovative solutions for the management, operation and development of their activities on a 350-hectare area. The Two Banks District relies on a digital collaboration platform, connecting large companies, entrepreneurs, non-governmental organisations, citizen groups and policy makers to share best practices and co-create solutions. More than 30 companies can share equipment and services, recycle and upcycle waste in a synergetic way, reduce disposable food packaging, use carpool services, and collectively manage waste.
- **Glasgow, United Kingdom** has identified 800 vacant spaces that belong to the city. Repurposing these properties is now a priority for the Glasgow City Council. City Property Glasgow, a dedicated arm’s-length external organisation of the Glasgow City Council, is considering maximising the use of its estate and making it profitable in order to provide hubs, workspaces and premises for circular economy actors. Shared premises and facilities, Wi-Fi, Internet broadband, and equipment can help lower operational costs.

Sources: Urban Redevelopment Authority (2024^[39]); OECD (2021^[40]).

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Notes

¹ Municipal waste in the Netherlands is the sum of household waste and the resulting waste from municipal cleaning services.

² https://www.zuid-holland.nl/publish/pages/25142/a6_pzh_uitvoeringsprogramma_energie.pdf.

³ https://staatvan.zuid-holland.nl/portfolio_page/hernieuwbare-energie.

⁴ <https://www.government.nl/documents/letters/2021/04/09/vision-on-industry-in-the-netherlands>.

⁵ <https://www.iea.org/articles/transforming-industrial-processes-through-digitalisation>

Annex A. List of consulted stakeholders consulted during the policy dialogue

Table A A.1. List of consulted stakeholders consulted during the policy dialogue

| Institution | Name |
|--|-----------------------------|
| BlueCity | Sabine Biesheuvel |
| Circular Finance Lab | Hilde Sijbring |
| Circular West | Leon van Ast |
| Delft Technical University, Department of Urbanism | Alexander Wandl |
| Deltalinqs | Eline van Krimpen |
| Dura Vermeer | Theo Winter |
| Economic Board Zuid-Holland | Roy Osinga |
| Environmental Authority (Omgevingsdienst) | André Mutter |
| Exasun | Jan Jaap van Os |
| InnovationQuarter – regional investment office | Angelique Erkelenbosch |
| IPO – interprovincial organisation | Paulien Maarleveld |
| Ministry of Interior and Kingdom Relations | Eva van der Meulen |
| Ministry of Infrastructure and Water Management | Jan-Willem Oosterbroek |
| Ministry of Infrastructure and Water Management | Jur Braakman |
| Ministry of Infrastructure and Water Management | Martijn Tak |
| Municipality of Delft | Maaïke Zwart |
| Municipality of Gouda | Michel Klijmij-van der Laan |
| Municipality of Gouda | Michiel Bunnik |
| NSOB – Netherlands School of Public Administration | Martijn van der Steen |
| PackBack | Tine Bakia |
| PBL Netherlands Environmental Assessment Agency | Emil Evenhuis |
| Port of Rotterdam | Janneke Pors |
| Province of Noord-Holland | Herman Schartman |
| Province of Zuid-Holland | Aad Zoeteman |
| Province of Zuid-Holland | Annelies van der Stoep |
| Province of Zuid-Holland | Bart Verschoor |
| Province of Zuid-Holland | Coen Geerdink |
| Province of Zuid-Holland | Corry van Driel |
| Province of Zuid-Holland | Diana Vrijenhoek |
| Province of Zuid-Holland | Duncan Waardenburg |
| Province of Zuid-Holland | Jeannette Baljeu |
| Province of Zuid-Holland | Johan Remijnse |
| Province of Zuid-Holland | Johannes Vervoordeldonk |
| Province of Zuid-Holland | Maurice Berix |
| Province of Zuid-Holland | Meindert Stolk |
| Province of Zuid-Holland | Michiel Romer |
| Province of Zuid-Holland | Nicolas van Geelen |
| Province of Zuid-Holland | Paul Quak |

| | |
|--|------------------------|
| Province of Zuid-Holland | Robert Tekke |
| Province of Zuid-Holland | Seline Tap |
| Province of Zuid-Holland | Ton Jonker |
| Province of Zuid-Holland | Wouter Smit |
| Royal Institute of Dutch Architects | Tim Vermeend |
| Rijkswaterstaat, Directorate-General for Public Works and Water Management | Sabrina van der Linden |
| Stedin | Maarten Bijl |
| Team NXT | Yuri van Geest |
| Waterweg | Wies van Lieshout |
| YES!DELFT | David Beijer |

OECD Programme on the Circular Economy in Cities and Regions

The OECD Programme on the Circular Economy in Cities and Regions supports local and regional governments in designing and implementing policies allowing the transition from a linear to a circular economy in a shared responsibility with national governments, with a strong focus on the governance framework conditions required for the transition. The OECD Roundtable on the Circular Economy in Cities and Regions, a multi-stakeholder network gathering 100+ cities, regions and institutions, facilitates knowledge exchange.

European Commission's Circular Cities and Regions Initiative (CCRI)

Launched and funded by the European Union as part of the Circular Economy Action Plan, the Circular Cities and Regions Initiative (CCRI) focuses on implementing the circular economy across Europe's cities and regions. The CCRI aims to increase synergies among projects and initiatives, disseminate relevant knowledge, and give greater visibility to best practices. Combining this knowledge sharing with technical and financial support, it offers comprehensive support to stakeholders across Europe's cities and regions.

